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 FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT

50X1-HUM

CD NO.

COUNTRY USSR
 SUBJECT Economic - Coal, coke, gas
 HOW PUBLISHED Monthly periodicals
 WHERE PUBLISHED Moscow
 DATE PUBLISHED Dec 1952, Feb 1953
 LANGUAGE Russian

DATE OF INFORMATION 1952-1953

DATE DIST. 13 Jul 1953

NO. OF PAGES 2

SUPPLEMENT TO REPORT NO.

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SOURCE Periodicals as indicated.

EXPANSION OF USSR COKE, GAS SUPPLIES

PECHORA BASIN COAL YIELDS COKE AND GAS -- Moscow, Za Ekonomiyu Materialov, No 5, Dec 52

Up to the second quarter 1950, Leningrad received mainly Donbass coal, primarily graded anthracite, but from that time on Pechora basin coal has been shipped to the city; this has meant a great saving to the national economy.

In connection with the conversion of the power installations of the northwest, in particular Leningrad, to Pechora basin coal, a number of problems arose, chief among them being the need of improving the utilization of the coal and the removal of impurities from the air.

Part of the electrical equipment in the industry and in the city economy is not properly constructed for the burning of Pechora basin coal, which differs greatly in its technical characteristics from Donets anthracite. For example, Pechora basin run-of-the-mine coal contains up to 32 percent of volatile matter, while Donets graded anthracite contains only 3-4 percent.

The most efficient way of utilizing Pechora basin coal in Leningrad is to convert it by nonmetallurgical coking. By this method, every million tons of Pechora caking coal yield 350 million cubic meters of high-calorie gas, 650,000 tons of fuel coke with a calorific value of 6,500-6,800 kilocalories, and a 3-4 percent content of volatile substances. In addition, a considerable amount of benzene, ammonia, tar, and other valuable products will be obtained.

The suggestion of a group of engineers of constructing near Leningrad a coke plant which would use Pechora basin run-of-the-mine coal in nonmetallurgical coking has received the support of several organizations. Nonmetallurgical coking assures both the efficient use of Pechora basin coal with the preservation for the national economy of valuable products and also the purification of the city air. The possibility of using Pechora basin run-of-the-mine coal to obtain high-grade fuel coke has already been proved in the Leningrad Coke Gas Plant, where experimental coking gave positive results in 1952.

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The distribution of fuel coke among consumers will not meet with difficulties. According to the conclusions of the Central Scientific Research Institute of Boilers and Turbines imeni I. I. Polzunov, almost 80 percent of the power installations in Leningrad industry and in the system of the city economy can be converted to burning fuel coke without special additional expenses for re-equipment. Combustion will proceed effectively without any reduction in the productivity and economy of the operations of the installations.

Boiler experiments in burning fuel coke, carried out in the Leningrad Krasnyy Khimik Plant and in the Rabochiy Factory, have given positive results. The fuel coke is close to graded anthracite in its technical characteristics and is an almost smokeless fuel. Consequently, no soot is formed in its combustion and the atmosphere is kept free from soot and smoke.

Gas obtained from coking Pechora basin coal will supplement Leningrad gas supplies. This gas has a number of advantages over shale gas: its specific gravity is only half as great, which will permit an increase in the capacity of the already laid city gas pipeline; it has a considerably higher hydrogen content, which assures better combustion and, consequently, improved operations of domestic and communal gas installations.

A further increase in nonmetallurgical coking of Pechora coal will permit the almost complete elimination from the Leningrad fuel supplies of liquid fuel, brought from a distance, and the large assortment of chemical products such as benzene, ammonia, tars, etc., obtained during the coking process will find effective use in the national economy.

This data indicates that the construction of a coke gas plant will save the national economy a tremendous amount of fuel and will result, in addition, in a number of valuable types of products. -- V. Kudrov

MANUFACTURED GAS FOR HOUSEHOLD PURPOSES -- Moscow, Nauka i Zhizn', No 2, Feb 53

In recent years the gas supply of USSR cities has been greatly expanded. In addition to natural gas, gas obtained from anthracite, from peat, and from the underground gasification of coal is being used widely. From 3.5 to 4.4 cubic meters of generator gas with a calorific value of 1,250 kilocalories per cubic meter are obtained from one kilogram of anthracite, while one kilogram of peat yields up to 1.4 cubic meters of gas with a calorific value of 1,300-1,700 kilocalories.

Generator gas was burned only in industrial installations until recently, and its use for household purposes was considered impossible. However, Engineers D. M. Nemirovskiy, P. V. Skafa, V. I. Pen'kovskiy, and Ye. D. Kulish have recently experimented in the use of low-calorie gas in domestic appliances, in particular, in stoves of the Moscow Gazospparat Plant.

New types of burners have been designed for gas with a calorific value of 800-900 kilocalories per cubic meter. These burners are equipped with a special ceramic plate with openings in it. This makes it possible to decrease the consumption of gas, as well as the time required for heating up, and, at the same time, to increase the coefficient of useful activity of the gas appliance. During the experiments, smooth burning of the gas and a steady flame were achieved.

The work of these engineers is opening up extensive prospects for the use for domestic purposes of low-calorie gas obtained from local fuel. Production of manufactured gas may be organized in the majority of oblasts and rayons of the USSR on the basis of any local low-grade fuel. -- V. Chernyavskiy

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